

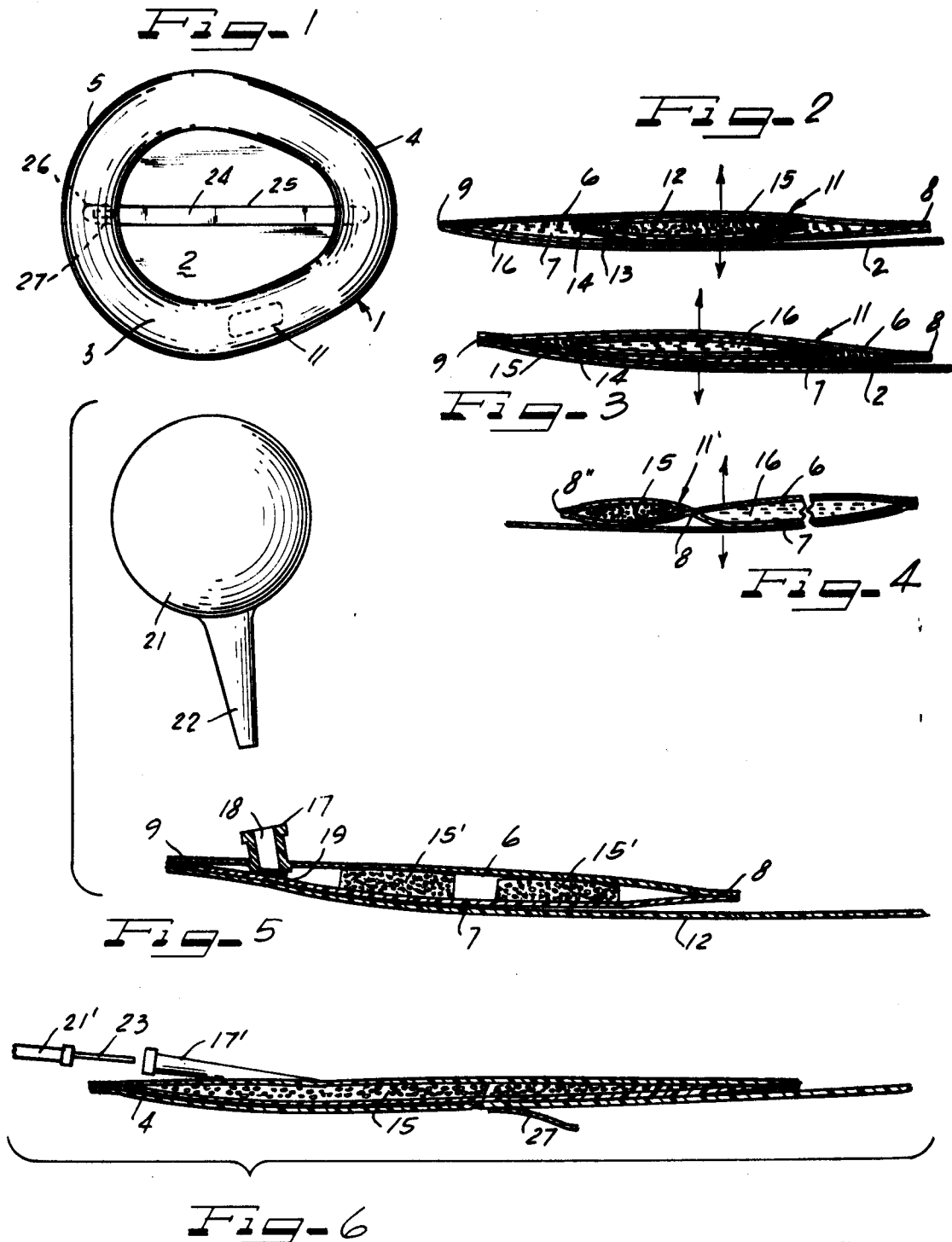
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DISPOSABLE SELF-INFLATABLE BED PAN

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DISPOSABLE SELF-INFLATABLE BED PAN
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ABSTRACT OF THE DISCLOSURE

A disposable self-inflatable bed pan comprising a body structure having an inflatable portion, constructed to produce a pan-shaped configuration when said portion is inflated, and activatable means arranged for reception in said inflatable portion and operable upon activation to effect inflation thereof, said activatable means comprising a material adapted to release a gas upon mixture with an activating liquid, with said material being disposed or disposable in said inflatable portion with said activating liquid being contained in said inflatable portion, out of contact with said material, or discharged into said inflatable portion at the time of usage.

BACKGROUND OF THE INVENTION

The invention is directed to an inflatable bed pan structure, particularly designed for a single usage, following which it may be readily disposed of, and in particular in which inflation may be readily and simply effected without the use of an independent supply of inflatable gas or the like.

The present construction is in general quite similar to that disclosed and described in my co-pending application, Ser. No. 706,051, but in such prior construction, inflation was achieved by the filling of the inflatable structure with a suitable gas or the like, obtained from an external source. As pointed out in such prior application, the oxygen supply, present in most modern hospital rooms, could readily be employed for inflation of the bed pan structure or if desired a small air pump of suitable construction could be employed, or even physical blowing up of the structure by lung power.

The present invention is directed to a bed pan structure of generally similar construction which may be readily inflated without the use of an external gas supply, either by completely self-contained inflating means or by the addition of an activating agent which is cooperable with materials carried by the pan structure.

The present invention thus is directed to a bed pan construction which offers the above advantages and yet which is simple in construction, easily inflated and which is inexpensive to manufacture.

BRIEF SUMMARY OF THE INVENTION

A bed pan constructed in accordance with the present invention may utilize an inflatable tubular envelope of generally ring-shaped configuration capable of being inflated to form a generally doughnut-shaped body structure having a bottom wall extending across the central opening and having its peripheral edges secured thereto in fluid-tight relation. Cooperable with such inflatable portion is an activatable material, capable of releasing a gas when activated by a suitable liquid, for example a bicarbonate capable of being activated by a dilute acid, or the combination of a bicarbonate and an acid-containing material, for example such as common baking powder, which may be activated merely by the addition of water, to give off carbon dioxide in a sufficient quantity to inflate the device.

Various arrangements may be provided for receiving and/or containing the activatable material and activating

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liquid, the latter either forming an integral part of the device, or adapted to be discharged into the device at the time of use. In the former case, all materials may be disposed in separated relation with or within the device, or the latter may be provided with an inlet valve through which the liquid may be discharged into operative contact with such material.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, wherein like reference characters indicate like or corresponding parts, and wherein a preferred form of the invention is illustrated, which, as will be apparent therefrom and from the following description, may be capable of various immaterial variations and modifications without departing from the spirit and scope of the novel concepts of the disclosure:

FIG. 1 is a top plan view of a bed pan embodying the invention, illustrating the same in substantially inflated condition;

FIG. 2 is a sectional view of the pan, in deflated condition taken approximately on the line II-II of FIG. 1;

FIG. 3 is a sectional view similar to FIG. 2 illustrating a modification of the construction illustrated in FIG. 2;

FIG. 4 is a fragmentary sectional view generally similar to FIGS. 2 and 3 illustrating a further modification;

FIG. 5 is a sectional view similar to FIGS. 2 and 3 of a further modification; and

FIG. 6 is a similar sectional view illustrating a modification similar to FIG. 5.

DETAILED DESCRIPTION OF INVENTION

Referring to FIGS. 1 and 2, the reference numeral 1 indicates generally a body structure comprising a bottom portion 2 and a tubular side wall structure 3 of generally doughnut-like configuration, which is slightly elongated from front to rear, with the front portion 4 having a shorter radius of curvature than the rear portion 5. The structure preferably is fabricated from sheet materials such as sheet plastic capable of receiving air or gas under pressure whereby the same may be inflated to the condition illustrated in FIG. 1 with the transverse cross section of the side wall 3 being more or less circular. Normally a gas pressure of 12 to 15 ounces per square inch is adequate for this purpose.

Referring to FIG. 2, the embodiment therein illustrated is constructed from three individual pieces of material, the bottom 2 comprising one piece and the wall structure 3 comprising two walls 6 and 7 formed from like pieces which initially have a planar shape and are suitably secured in sealed relation along their inner edges by thermal welding or other suitable means to form a seam 8 and in like manner the outer edges of the walls 6 and 7, as well as the adjacent peripheral portion of the bottom 2 are similarly secured together to form a seam 9. A tubular-shaped envelope is thus formed which may be inflated by means of the formation, in situ, of an inflating gas, as for example, CO₂.

Two general types of arrangements for effecting inflation are illustrated in the drawings, one of which, illustrated in FIGS. 2-4, both the activatable material and the activating material, illustrated as being a liquid, are contained within or associated directly with the side wall structure 3, in separated relation and adapted to be mixed at the time of usage. In the other type of arrangement, illustrated in FIGS. 5 and 6, the activatable material is contained in the side wall structure with the latter being provided with suitable means for effecting injection of a desired amount of activating material, preferably in the form of a liquid, into the side wall structure and thus

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into mixing contact with the activatable material to liberate the inflating gas.

Any suitable materials may be employed for the activatable and activating materials, all of which are well known and per se form no part of the present invention.

For example, the activatable material may consist of a suitable carbonate, in bulk or powdered form, or in a solid or block form such as in tablets or pellets. In such case, the activating liquid may consist of a dilute acid which will react with the carbonate to liberate carbon dioxide.

Another readily procurable and commonly used material is ordinary baking powder which usually consists of a mixture of sodium bicarbonate with some solid acid substance, such as cream of tartar, potassium hydrogen tartrate, or the like, in which case the activating liquid may be plain water.

In the embodiment illustrated in FIGS. 1 and 2, disposed within the side wall structure 3 is a container 11 which may be constructed in a manner similar to the side wall structure, in the form of a pair of coextensive superimposed sheets 12 and 13 which are bonded or otherwise secured along their peripheral edges as indicated at 14 to form a two-walled container in which is disposed the activatable material 15, illustrated as being in powdered or granular form and consisting, for example, of common baking powder.

The size of the container 11 preferably is such that it will readily receive the material 15 and permit the same to be distributed over a sufficiently large area that the container normally will lay relatively flat between the walls 6 and 7. The container 11 preferably is secured over at least a portion of the area of the walls 12 and 13 to the adjacent walls 6 and 7 by means of a suitable adhesive or the like and disposed within the body structure, exteriorly of the container 11 is a suitable liquid supply 16, consisting of water where the material 15 is a baking powder. The quantities of the activatable material 15 and activating liquid 16 are so selected that the liquid 16 present is sufficient to effect a complete release of gas from the material 15, with the latter being present in a quantity sufficient to provide a sufficient volume of gas to achieve a pressure within the body structure of approximately 12 to 14 ounces.

In effecting an inflation of the structure illustrated in FIGS. 1 and 2 the user merely grasps the walls 6 and 7 at the connection thereof with the walls 12 and 13 and exerts a separating action thereon in the direction of the arrows, sufficient force being applied thereto to rupture the container 11 and thereby discharge the contents thereof into the liquid 16. Preferably the container 11 is so constructed that while it will normally effectively retain the material 15 in separated relation with respect to the liquid 16, it will under the application of separating forces, as described, readily rupture at a seam or other desired location to accomplish the desired results.

The construction illustrated in FIG. 3 is substantially identical with that illustrated in FIG. 2 with the exception that the liquid 16 is disposed in the container 11 while the material 15 is disposed exteriorly thereof in the side wall structure 3.

FIG. 4 illustrates a construction similar to FIG. 2, in which the liquid 16 is contained in the side wall structure 3 and the material 15 in a container 11' illustrated as being formed from the same sheet material employed in the formation of the walls 6 and 7 with the juncture between the container 11' and the body structure being defined by the seam 8, corresponding to the inner seam 8 with the container 11' being disposed, for example, at the small end 4 of the structure. The remaining edges of the container 11' may be formed by a peripheral seam or weld 8'. Obviously, the container 11' may be disposed either along the seam 8, as illustrated, or along the seam 9.

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The construction illustrated in FIG. 5 is similar to that illustrated in FIGS. 1 through 3 with the exception that the container 11 is omitted, the activatable material, in the embodiment illustrated in FIG. 5 comprising blocks 14', in the form of tablets, wafers or pellets which are disposed directly within the side wall body structure defined by the walls 6 and 7, with the upper wall 6 being provided with a fluid inlet member 17, illustrated as being of generally tubular formation having a fluid passage 18 therein, at the inner end of which is disposed a flap valve element 19 adapted to seal the inner end of the passageway 18 in the presence of a pressure within the structure. In this construction, assuming that the material 15' is a baking powder composition or the like requiring merely the addition of water, such water may be added by means of a suitable device such as a syringe 21 having a discharge nozzle 22, the free end of which is of a size to be inserted in the passageway 18. The syringe 21 is preferably so proportioned that it will contain and permit injection of a measured quantity of water into the body structure, sufficient to activate the quantity of material 15' therein disposed.

The construction illustrated in FIG. 6 is similar to that illustrated in FIG. 5 with the exception of the construction of the fluid inlet member 17'. In this construction the member 17' is constructed from a suitable rubber or the like having self sealing characteristics which will enable the insertion of a needle 23 attached to a suitable syringe 21' to be inserted and pierce the material of the member 17' for effecting the discharge of the activating liquid into the body structure, following which the needle may be withdrawn and the body structure sealed as a result of the self sealing characteristics of the member 17'. In this construction, the material 15 is illustrated as being in powdered or granular form, corresponding to that of FIG. 2.

As illustrated in FIGS. 1 and 6, the bed pan structure may be constructed in a manner similar to that illustrated in my co-pending application, with the bottom 2, having an elongated strip 24 defined by lines 25 and 26 of reduced thickness, forming tearlines along which the strip 24 may be severed from the bottom 2 to permit discharge of the contents. Such tearing action may be achieved by grasping a loop portion 27 secured to the strip 24, as clearly illustrated in FIG. 6.

As illustrated in FIG. 6 the inlet member 17' may be conveniently located adjacent the narrow portion 4 of the pan while the fitting 17 may be disposed at any suitable accessible location.

The present invention is of particular application where a tank or other bulk gas supply is not readily accessible or in any other application where it is desirable that the device be substantially self-contained. Thus the constructions of FIGS. 2-4 are of particular usage in homes or in isolated cases where only a relatively few pans of this type are to be utilized. On the other hand, where a relatively large number of pans are to be employed and it is not desired to use a bulk gas supply line or the like for inflation, the constructions of FIGS. 5 and 6 are particularly suitable, preferably employing activatable materials which are operative merely by the addition of water.

It will be appreciated from the above disclosure that I have provided a disposable, self-inflatable bed pan which is extremely simple in construction, efficient in usage and relatively inexpensive to manufacture whereby it may be employed as a throw-away item.

I claim as my invention:

1. A disposable, self-inflatable bed pan comprising a body structure having an inflatable portion, constructed to produce a pan-shaped configuration when said portion is inflated, said portion being adapted to be inflated by reaction of an activatable material, at least one of said materials being directly disposed in said portion with the latter forming the container therefor, said portion having means by which introduction may be effected of said

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other material into said portion for intermixture with the material contained therein.

2. A disposable bed pan according to claim 1, wherein said activating material is a liquid, a wall of said body structure being provided with a fluid inlet member forming said introduction means, through which a quantity of activating liquid may be introduced into the body structure for intermixing with said activatable material.

3. A disposable bed pan according to claim 2, wherein said inlet member is constructed in the form of a tubular element having a fluid passageway therethrough, and a valve member adjacent the inner end of said passageway arranged to close the latter in response to internal pressure within said body structure.

4. A disposable bed pan according to claim 2, wherein said activatable material is in the form of at least one solid block.

5. A disposable bed pan according to claim 2, wherein said activatable material is in bulk form such as powdered or granulated form.

6. A disposable bed pan according to claim 2, wherein said inlet member is arranged to receive a piercing needle, through which activating liquid may be discharged into said body structure, said inlet member being constructed of a material having self-sealing properties, whereby said member will seal the body interior upon withdrawal of such a needle.

7. A disposable bed pan according to claim 1, comprising in further combination, a normally sealed container disposed in said body structure, both said activatable and activating materials being disposed in said body structure, with one of them being disposed in said container and thereby separated from the other, said container having a rupturable wall forming said introduction means which will permit rupture thereof at time of use.

8. A disposable bed pan according to claim 7, wherein said container comprises a pair of sheet-like members secured together along a generally annular line to form a relatively flat closed two-walled container.

9. A disposable bed pan according to claim 8, wherein the walls of said container are secured to oppositely disposed walls of said body structure whereby said container may be ruptured by manually effected separating movement of such walls of the body structure.

10. A disposable bed pan according to claim 7, wherein said activatable material is disposed in said container and said activating material is disposed directly in said body structure.

11. A disposable bed pan according to claim 7, wherein said activating material is disposed in said container and said activatable material is disposed directly in said body structure.

12. A disposable bed pan according to claim 1, wherein said activatable material comprises a bicarbonate and said activating material comprises a dilute acid.

13. A disposable bed pan according to claim 1, wherein said activatable material comprises a bicarbonate and a solid acid material, and said activating material is water.

14. A disposable bed pan according to claim 1, wherein said body comprises an inflatable tubular envelope of ring-shaped configuration, forming upon inflation a generally doughnut-shaped structure, and a bottom wall extending across the central opening of said body structure and having its peripheral edges secured thereto in fluid tight relation.

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15. A disposable bed pan according to claim 14, wherein said tubular envelope comprises two like, ring-shaped halves of sheet material, and said bottom wall comprises a sheet of material having a peripheral configuration of the same size and shape as the outer peripheral configuration of said halves, the latter having their inner peripheral edges joined in sealed relation, and the outer peripheral edges of said halves being joined in sealed relation to each other and to the peripheral edges of said bottom wall.

16. A disposable bed pan according to claim 15, wherein both said activatable and activating materials are contained in said tubular envelope, comprising in further combination, a normally sealed container having a pair of sheet-like members secured together along a generally annular line to form a relatively flat closed two-walled container, said container being disposed in said tubular envelope with the container walls secured to respective annularly shaped halves, whereby said container may be ruptured by manual separating movements of such annular halves.

17. A disposable bed pan according to claim 15, wherein said ring-shaped halves comprising said tubular envelope coextensive wall portions extending beyond one of said jointed peripheral edges to form a pair of coextensive wall portions, the free peripheral edges of which are joined in sealed relation, and cooperable with the seal formed by the adjacent joined peripheral edges of said tubular envelope to form a sealed container, both the activatable and activating materials being carried by said tubular envelope with one of such materials being disposed in the latter and the other of such materials being disposed in said container, the common seal at the adjoining peripheral edges of said envelope and said container being rupturable to permit communication therebetween and intermixing of such materials.

18. A disposable bed pan according to claim 15, wherein the cross-sectional dimensions of said body, are such that the structure, when inflated, may be folded substantially along the longitudinally center line thereof to bring the portions of the body at each side thereof in contact substantially throughout their length and thereby temporarily substantially seal the contents thereof.

19. A disposable bed pan according to claim 18, wherein said means for facilitating emptying the pan comprises a weakened portion, operative to localize such rupturing to a predetermined area, and means disposed at such weakened portion, at the exterior side of said bottom wall, which upon the application of force thereto is operative to effect such a rupturing of the bottom wall.

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